Preliminary Checkout, Equipment & Notes

CHECKOUT

- Visually inspect the engine compartment to ensure all vacuum hoses and spark plug wires are properly routed and securely connected.
- Examine all wiring harnesses and connectors for insulation damage, burned, overheated, loose, or broken conditions.
- Be certain the battery is fully charged.
- All accessories should be Off during diagnosis.

EQUIPMENT

Obtain the following test equipment or an equivalent:

- Spark Tester, Special Service Tool D81P-6666-A. See note.
- Digital Volt-Ohmmeter Rotunda 014-00407.
- 12 Volt Test Light.
- Small straight pins (2).

NOTES

- All wire colors referred to in this part relate to the colors of the ignition module wires. When working with a wiring harness, the wires must be traced back to the ignition module for proper color identification.
- When instructed to inspect a wiring harness, both a visual inspection and a continuity test should be performed.
- When making measurements on a wiring harness or connector, it is good practice to wiggle the wires while measuring.
- A spark plug with a broken side electrode **is not** sufficient to check for spark and may lead to incorrect results.

Start Circuits

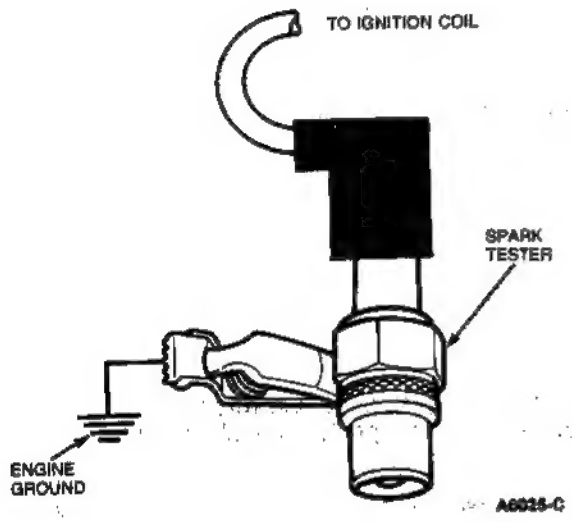
DS II

Part 2 Test 1

TEST EQUIPMENT: SPARK TESTER, VOM

TEST PROCEDURE

1. Connect spark tester between ignition coil wire and engine ground.
2. Crank engine using ignition switch.



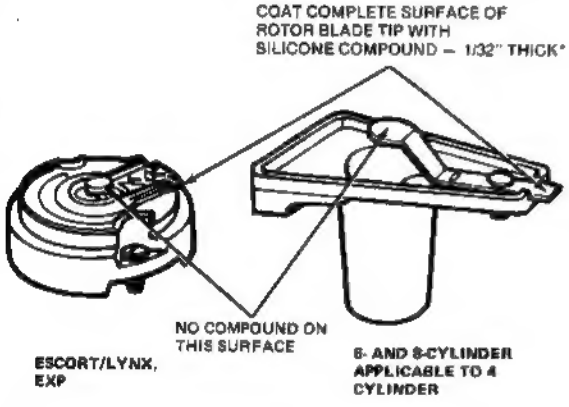
TEST RESULT	TEST RESOLUTION
Sparks	• Go to Part 2, Test 2.
No Sparks	• Measure resistance of ignition coil wire. Replace if greater than 7,000 ohms per foot. • Inspect ignition coil for damage, carbon tracking. • Crank engine to verify distributor rotation. Refer to Shop Manual, Group 23 and service as required. • Go to Part 2, Test 5.

Run Circuits | DS II | Part 2 Test 2

TEST EQUIPMENT: SPARK TESTER, VOM

TEST PROCEDURE

1. Turn ignition switch from Off to Run to Off position several times.
2. Spark should occur each time switch goes from Run to Off position.
3. Remove spark tester, reconnect coil wire to distributor cap.



*DO NOT USE SILICONE COMPOUND ON MULTIPOINT ROTOR.

TEST RESULT	TEST RESOLUTION
Sparks	• Inspect distributor cap, adapter, rotor for cracks, carbon tracking, lack of silicone compound. • Check for roll pin securing armature to sleeve in distributor. • Check that ORANGE and PURPLE wires not crossed between distributor and ignition module. • If ignition module has Basic Part No. (-12A244-), Go to the Spark Timing section to check spark retard operation.
No Sparks	• Go to Part 2, Test 3.

Module Voltage

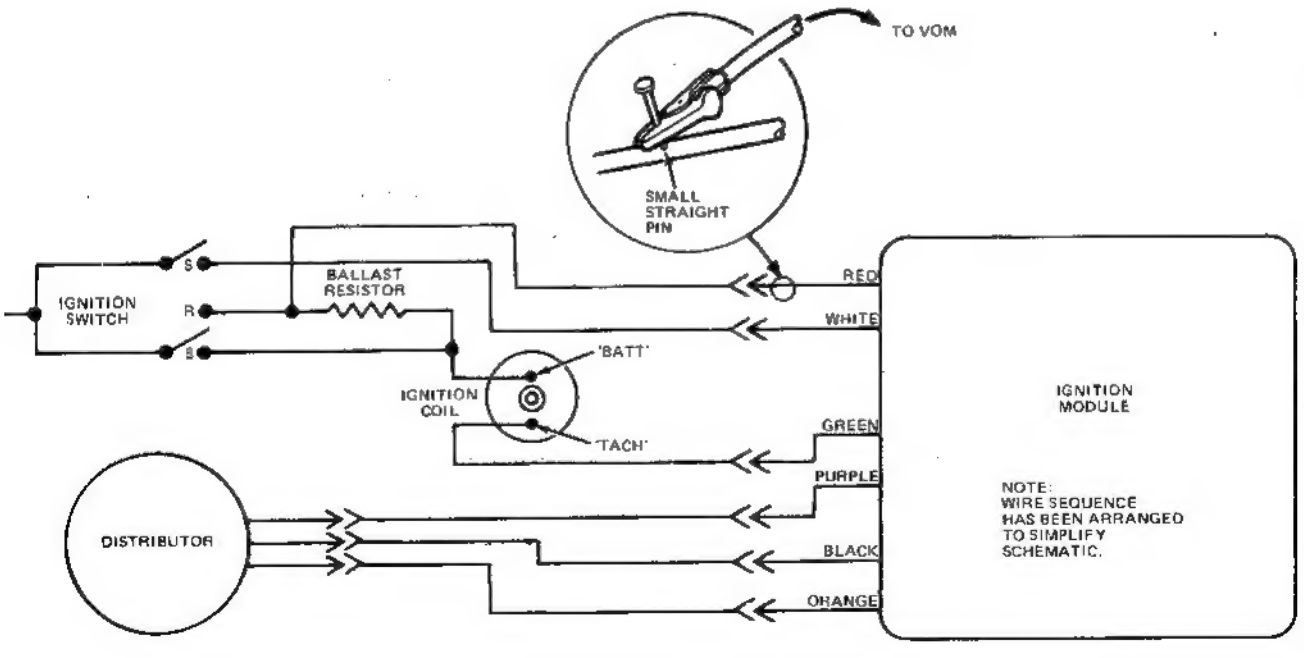
DS II

Part 2 Test 3

TEST EQUIPMENT: VOM, STRAIGHT PIN

TEST PROCEDURE
• Turn ignition switch Off. 1. Carefully insert small straight pin in RED module wire. **CAUTION: Do not allow straight pin to contact electrical ground.** 2. Attach negative (–) VOM lead to distributor base. 3. Measure battery voltage. 4. Measure voltage at straight pin with ignition switch in Run position. 5. Turn ignition switch to Off position. 6. Remove straight pin.

TEST RESULT	TEST RESOLUTION
90 percent of battery voltage or greater	• Go to Part 2, Test 4.
Less than 90 percent of battery voltage	• Refer to vehicle wiring diagram. Inspect wiring harness between module and ignition switch. • Worn or damaged ignition switch. Refer to Shop Manual, Group 33.



Ballast Resistor

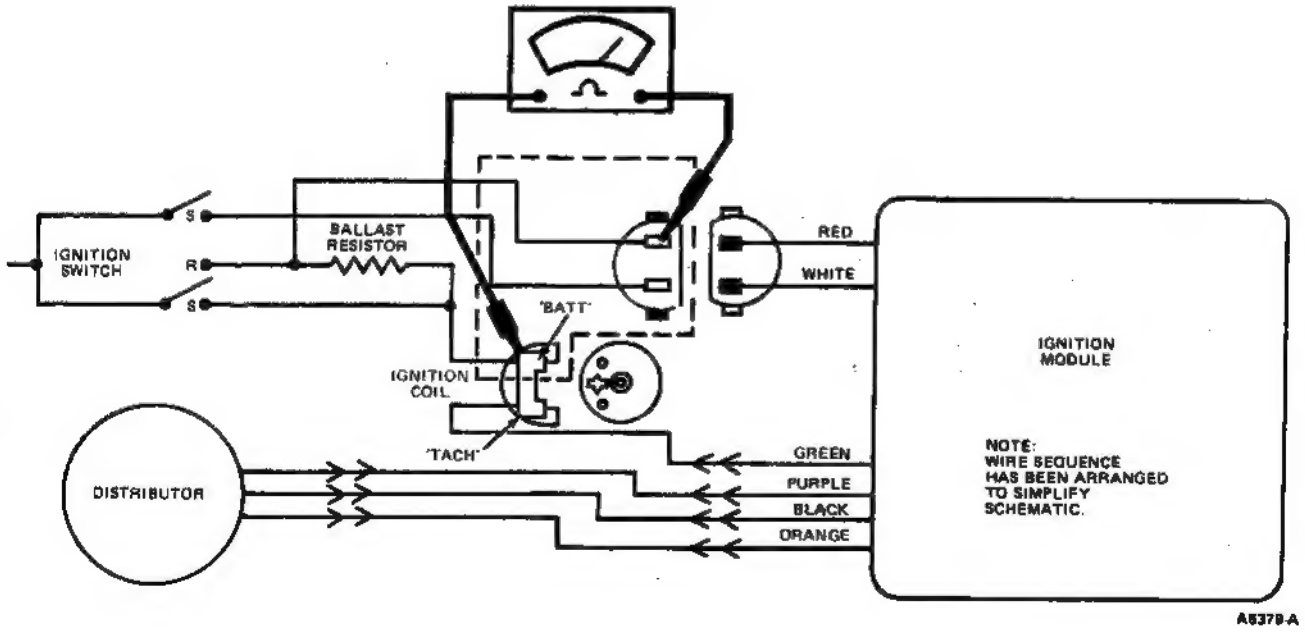
DS II

Part 2 Test 4

TEST EQUIPMENT: VOM

TEST PROCEDURE
1. Separate and inspect ignition module two wire connector with RED and WHITE wires. 2. Disconnect and inspect ignition coil connector. 3. Measure ballast resistor between BATT terminal of ignition coil connector and wiring harness connector mating with RED module wire. 4. Reconnect all connectors.

TEST RESULT	TEST RESOLUTION
0.8 to 1.6 ohms	• Problem is either intermittent or not in ignition system. • Refer to Intermittent Diagnosis or return to Section 2, Diagnostic Routines.
Less than 0.8 or greater than 1.6 ohms	• Replace ballast resistor.



Supply Voltage Circuits

DS II

Part 2 Test 5

TEST EQUIPMENT: VOM, STRAIGHT PINS

TEST PROCEDURE

1. Remove SPARK TESTER, reconnect coil wire to distributor cap.
2. If starter relay has I terminal, disconnect cable from starter relay to starter motor.
3. If starter relay does not have I terminal, disconnect wire to S terminal of starter relay.
4. Carefully insert small straight pins in RED and WHITE module wires.

   CAUTION: Do not allow straight pins to contact electrical ground.

5. Measure battery voltage.
6. Following table below, measure voltage at points listed with ignition switch in position shown.

   NOTE
   - **Attach negative (−) VOM lead to distributor base.**
   - **Wiggle wires in wiring harness when measuring.**

WIRE/ TERMINAL	CIRCUIT	IGNITION SWITCH TEST POSITION
RED	RUN	RUN
WHITE	START	START
'BATT' TERMINAL IGNITION COIL	BALLAST RESISTOR BYPASS	START

7. Turn ignition switch to Off position.
8. Remove straight pins.
9. Reconnect any cables/wires removed from starter relay.

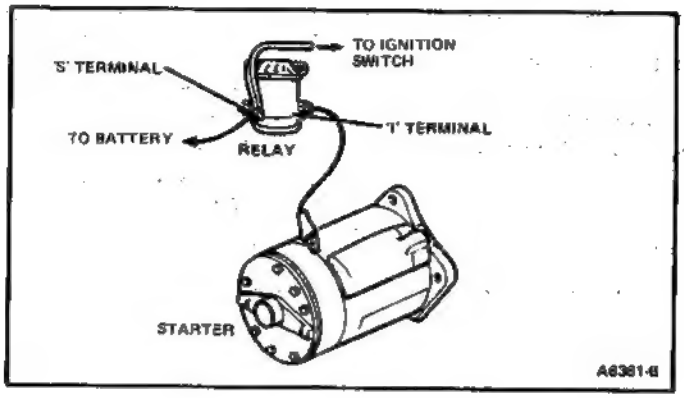
TEST RESULT	TEST RESOLUTION
90 percent of battery voltage or greater.	• Test result OK. • Go to Part 2, Test 6.
Less than 90 percent of battery voltage	• Refer to vehicle wiring diagram. Inspect wiring harness and connector(s) in faulty circuit(s). • Worn or damaged ignition switch: Refer to Shop Manual, Group 33. • Radio interference capacitor on ignition coil.

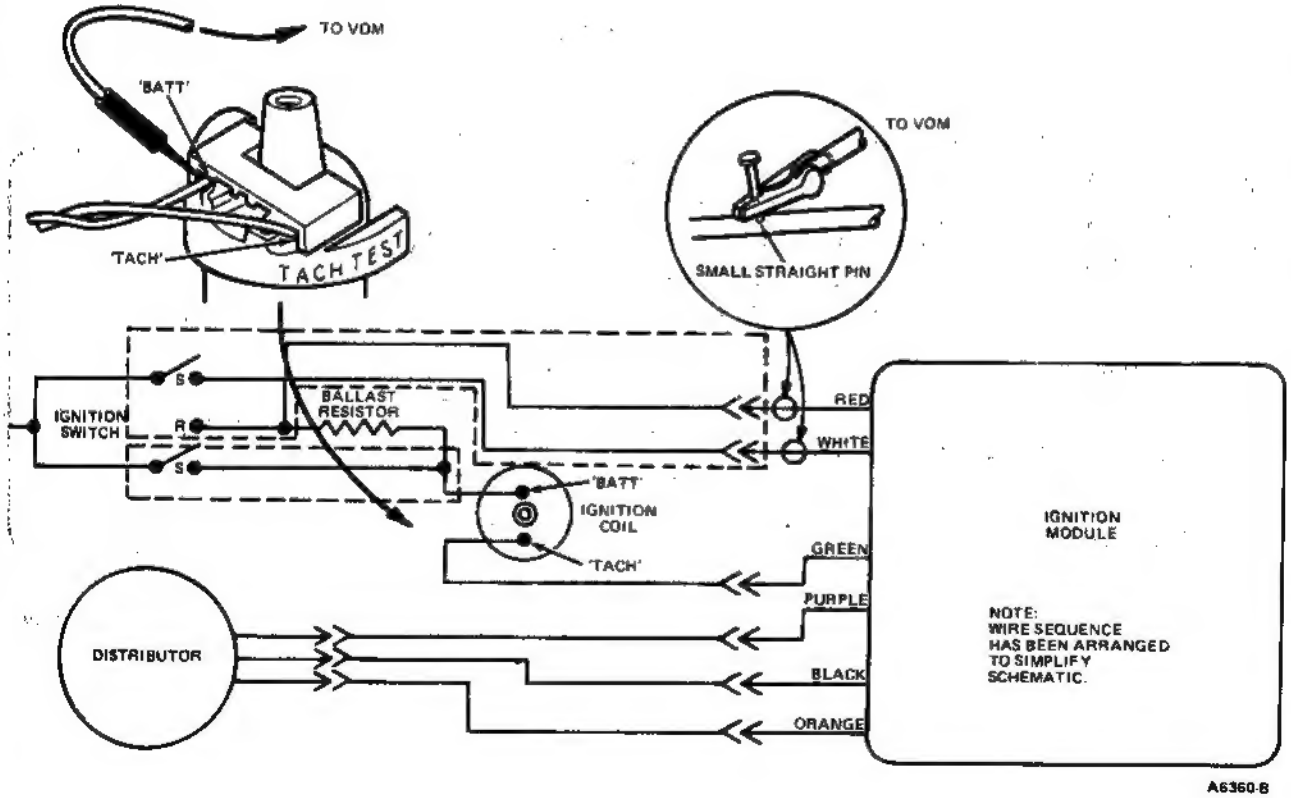
Supply Voltage Circuits (Continued)

DS II

Part 2 Test 5

TEST EQUIPMENT: VOM, STRAIGHT PINS





Ignition Coil Supply Voltage

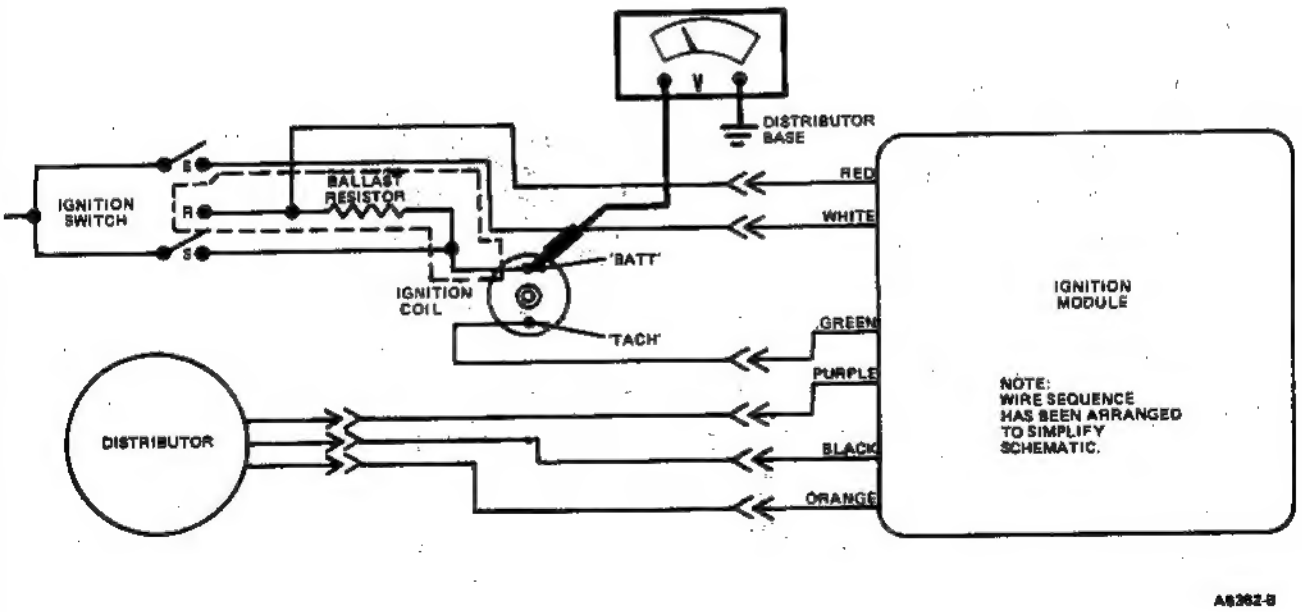
DS II

Part 2 Test 6

TEST EQUIPMENT: VOM

TEST PROCEDURE
1. Attach negative (−) lead of VOM to distributor base. 2. Turn ignition switch to Run position. 3. Measure voltage at BATT terminal of ignition coil. 4. Turn ignition switch to Off position.

TEST RESULT	TEST RESOLUTION
6 to 8 volts	• Go to Part 2, Test 7.
Less than 6 volts or greater than 8 volts	• Go to Part 2, Test 12.



Distributor Stator Assembly and Wiring Harness

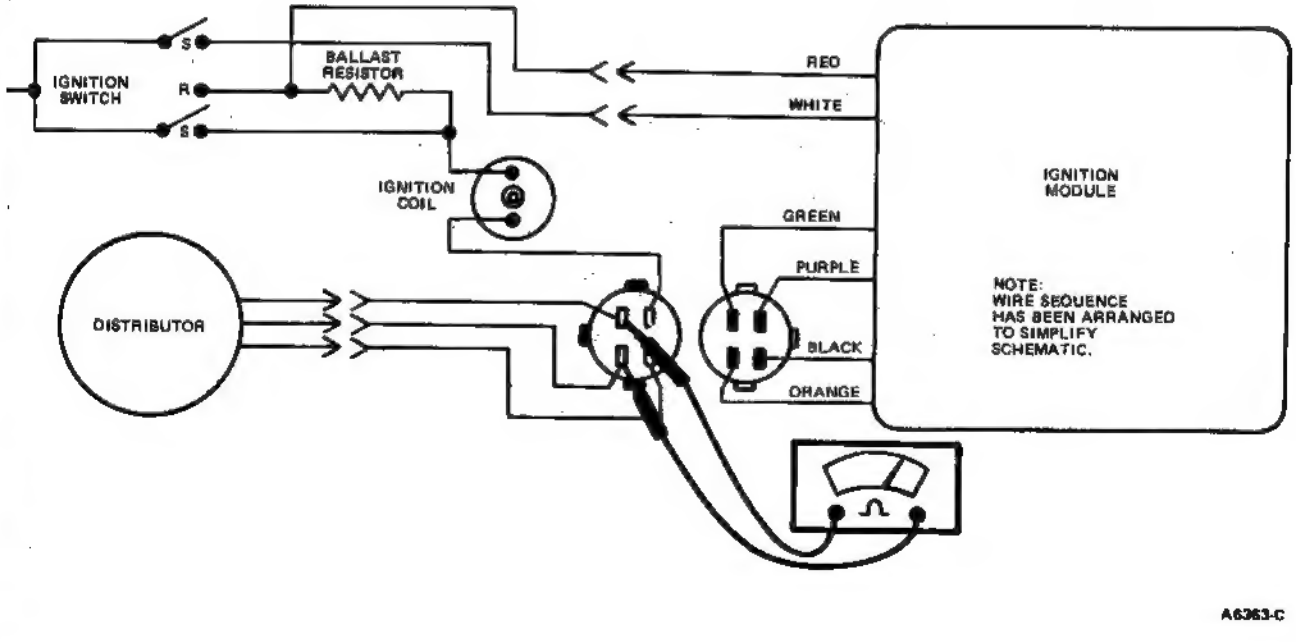
DS II

Part 2 Test 7

TEST EQUIPMENT: VOM

TEST PROCEDURE
1. Separate ignition module four wire connector. Inspect for dirt, corrosion, and damage. 2. Measure stator assembly and wiring harness resistance between wiring harness terminals mating with ORANGE and PURPLE module wires. **NOTE: Wiggle wires in wiring harness when measuring.**

TEST RESULT	TEST RESOLUTION
400 to 1,300 ohms	• Test result OK. • Go to Part 2, Test 8.
Less than 400 or greater than 1,300 ohms	• Go to Part 2, Test 11.



Ignition Module to Distributor Stator Assembly Wiring Harness

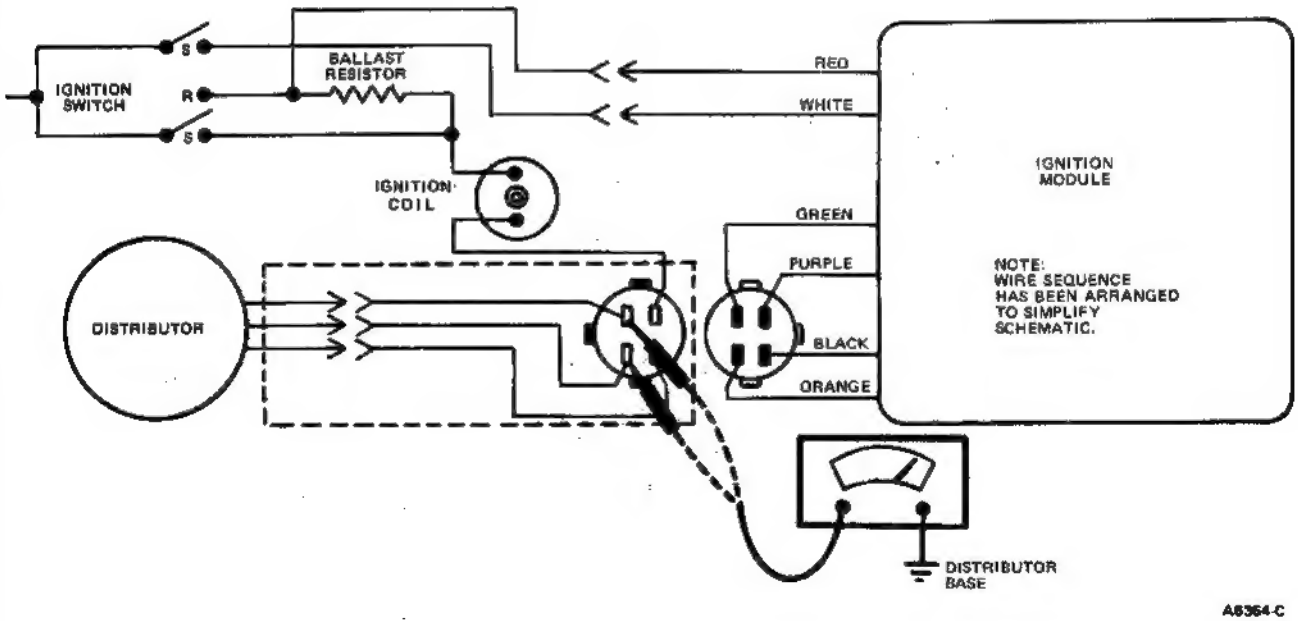
DS II

Part 2 Test 8

TEST EQUIPMENT: VOM

TEST PROCEDURE
1. Attach one VOM lead to distributor base. 2. Alternately measure resistance between wiring harness terminals mating with ORANGE and PURPLE module wires and ground. 3. Reconnect four wire connector.

TEST RESULT	TEST RESOLUTION
Greater than 70,000 ohms	• Test result OK. • Go to Part 2, Test 9.
Less than 70,000 ohms	• Inspect wiring harness between module connector and distributor, including distributor grommet.



Ignition Coil Secondary Resistance

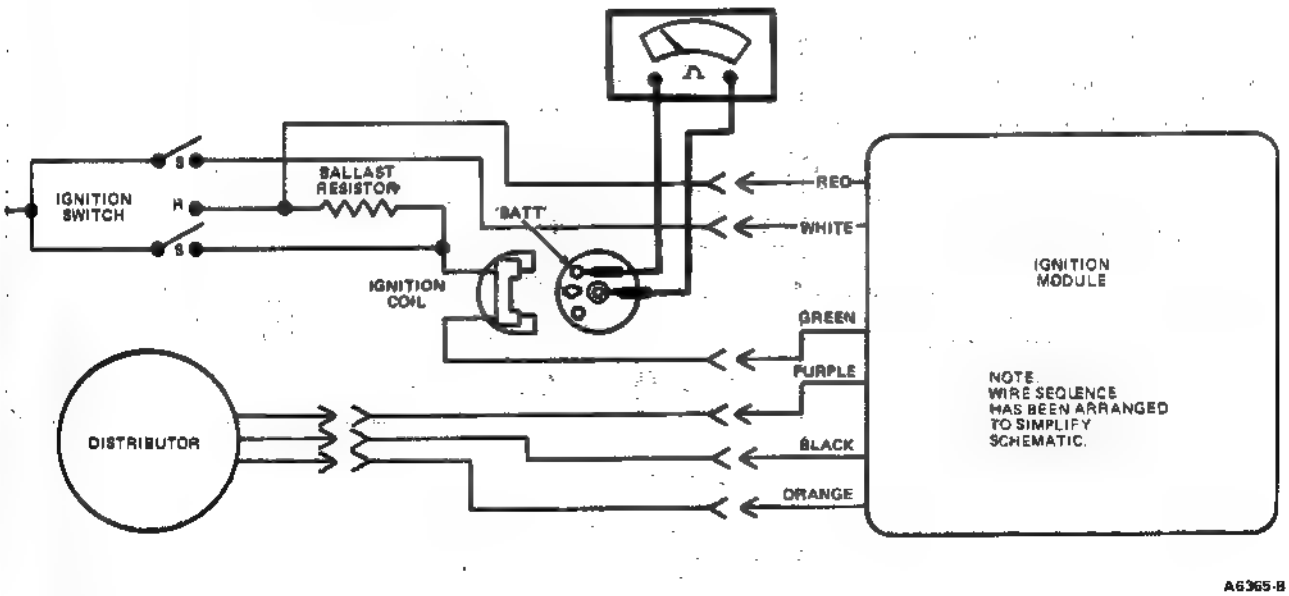
DS II

Part 2 Test 9

TEST EQUIPMENT: VOM

TEST PROCEDURE
1. Disconnect and inspect ignition coil connector and coil wire. 2. Measure secondary resistance from BATT terminal to high voltage terminal. 3. Reconnect ignition coil wire.

TEST RESULT	TEST RESOLUTION
7,700 to 10,500 ohms	• Test result OK. • Go to Part 2, Test 10.
Less than 7,700 ohms or greater than 10,500 ohms	• Replace ignition coil.



Module to Coil Wire

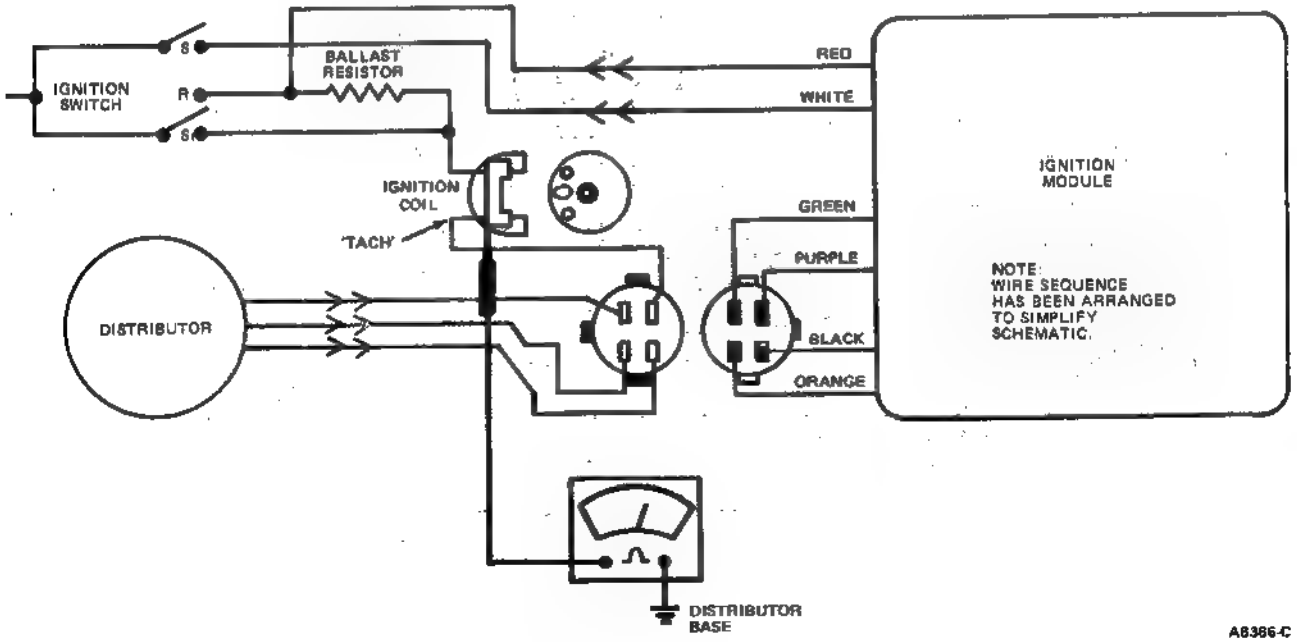
DS II

Part 2 Test 10

TEST EQUIPMENT: VOM

TEST PROCEDURE
1. Separate and inspect ignition module four wire connector and ignition coil connector from coil. 2. Connect one lead of VOM to distributor base. 3. Measure resistance between TACH terminal of ignition coil connector and ground. 4. Reconnect ignition module and coil connectors.

TEST RESULT	TEST RESOLUTION
Greater than 100 ohms	• Replace ignition module.
100 ohms or less	• Inspect wiring harness between ignition module and coil.



Distributor Stator Assembly

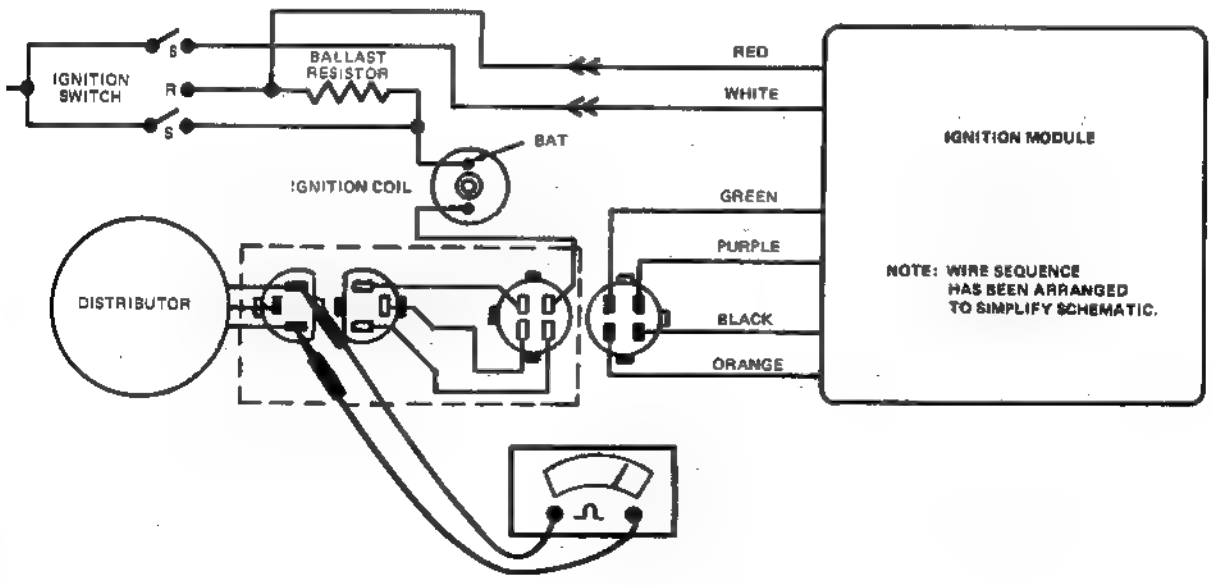
DS II

Part 2 Test 11

TEST EQUIPMENT: VOM

TEST PROCEDURE
1. Separate distributor connector from harness. Inspect for dirt, corrosion, and damage. 2. Measure stator assembly resistance across ORANGE and PURPLE wires at distributor connector. 3. Reconnect distributor and module connectors.

TEST RESULT	TEST RESOLUTION
400 to 1,000 ohms	• Test result OK. • Inspect wiring harness between distributor and ignition module.
Less than 400 or greater than 1,000 ohms	• Replace stator assembly.



Ignition Coil Primary Resistance

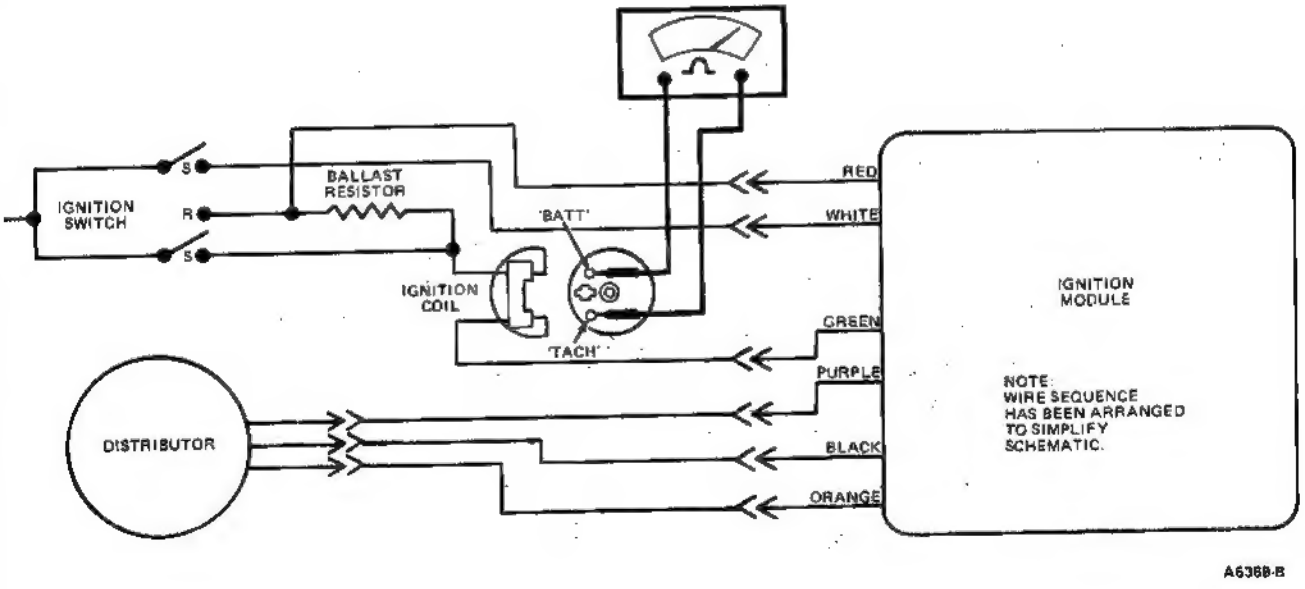
DS II

Part 2 Test 12

TEST EQUIPMENT: VOM

TEST PROCEDURE
1. Disconnect ignition coil connector. 2. Measure primary resistance from BATT to TACH terminal. 3. Reconnect ignition coil connector.

TEST RESULT	TEST RESOLUTION
0.8 to 1.6 ohms	• Test result OK. • Go to Part 2, Test 13.
Less than 0.8 or greater than 1.6 ohms	• Replace ignition coil.



Primary Circuit Continuity

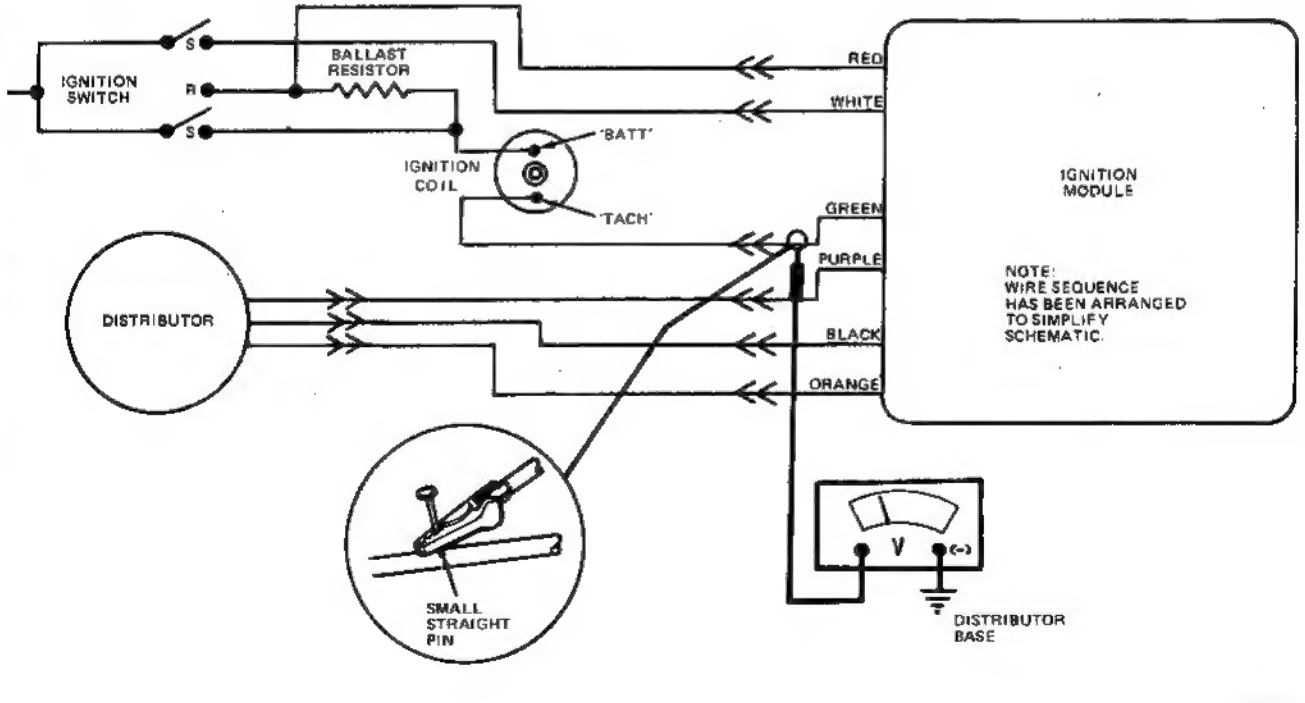
DS II

Part 2 Test 13

TEST EQUIPMENT: VOM, STRAIGHT PIN

TEST PROCEDURE
1. Carefully insert small straight pin in module GREEN wire. **CAUTION: Do not allow straight pin to contact electrical ground.** 2. Attach negative (−) VOM lead to distributor base. 3. Turn ignition switch to Run position. 4. Measure voltage at GREEN module wire. 5. Turn ignition switch to Off position. 6. Remove straight pin.

TEST RESULT	TEST RESOLUTION
Greater than 1.5 volts	• Go to Part 2, Test 14.
1.5 volts or less	• Inspect wiring harness and connectors between ignition module and coil.



Ground Circuit Continuity

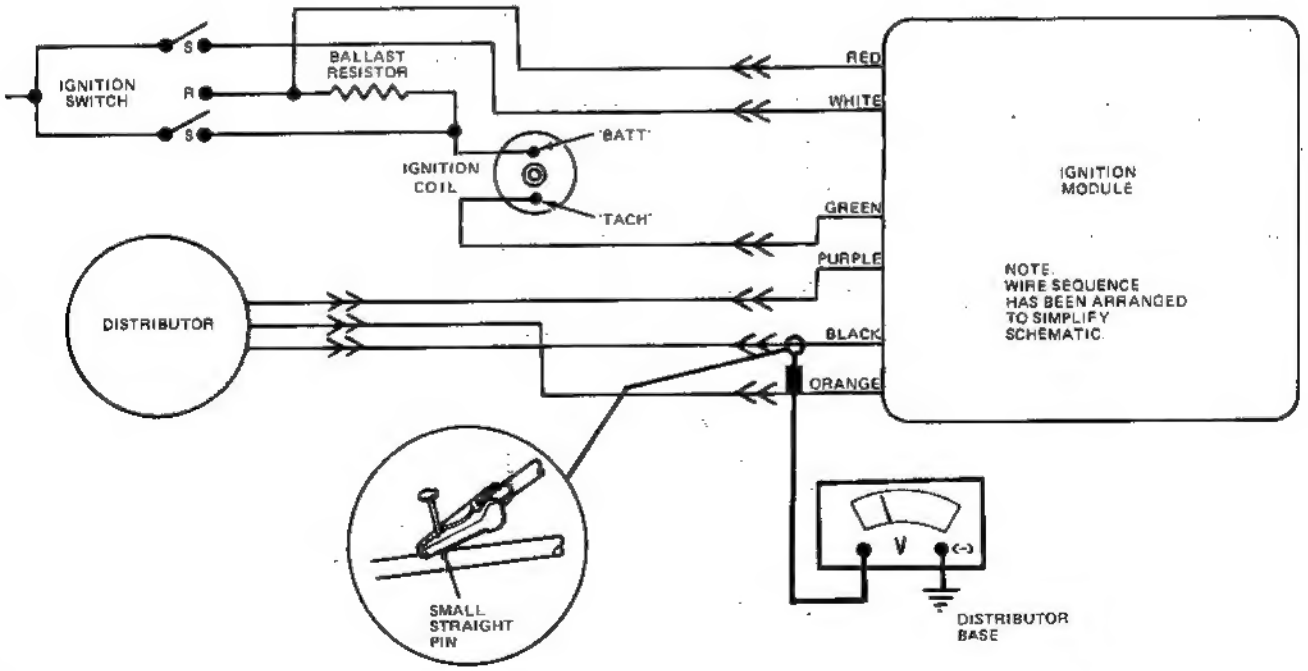
DS II

Part 2 Test 14

TEST EQUIPMENT: VOM, STRAIGHT PIN

TEST PROCEDURE
1. Carefully insert small straight pin in module BLACK wire. **CAUTION: Do not allow straight pin to contact electrical ground.** 2. Attach negative (–) VOM lead to distributor base. 3. Turn ignition switch to Run position. 4. Measure voltage at BLACK wire. 5. Turn ignition switch to Off position. 6. Remove straight pin.

TEST RESULT	TEST RESOLUTION
Greater than 0.5 volt	• Go to Part 2, Test 15.
0.5 volt or less	• Replace ignition module.



Distributor Ground Circuit Continuity

DS II

Part 2 Test 15

TEST EQUIPMENT: VOM

TEST PROCEDURE
1. Separate distributor connector from harness. Inspect for dirt, corrosion, and damage. 2. Attach one lead of VOM to distributor base. 3. Measure resistance by attaching other VOM lead to BLACK wire in distributor connector. **NOTE: Wiggle distributor grommet when measuring.** 4. Reconnect distributor connector.

TEST RESULT	TEST RESOLUTION
Less than one ohm	• Test result OK. • Inspect wiring harness and connectors between distributor and ignition module.
Greater than one ohm	• Inspect ground screw in distributor.